

**What is claimed is:**

1. A method to be performed by a UE (user equipment), for said UE in P2P communication mode to perform cell handover, comprising steps of:

(a) detecting downlink signals of the active cell in which said UE is camping and its adjacent cells;

(b) judging whether there exists a suitable cell whose link performance is a predefined value higher than that of said active cell, according to the detecting result;

(c) sending a detection report message to a network system to start a judging procedure of said network system if there exists said suitable cell, and said judging procedure deciding whether said UE and another UE in P2P communication can handover into said suitable cell to continue P2P communication.

2. The method in claim 1, wherein step (b) includes:

(b1) judging whether there exist candidate cells whose link performance can meet the requirement for communication quality in said adjacent cells, according to the detecting result of downlink signals;

(b2) judging whether there exists said suitable cell in the candidate cells

PHCN030056WO

22

PCT/IB2004/052344

if there exist the candidate cells.

3. The method in claim 2, further comprising:

sending a report message about candidate cells to said network system  
to report said decided candidate cells to said network system.

5 4. The method in any one of claim 1 to 3, further comprising:

(d1) receiving a cell handover command from said network system;  
(e1) establishing a P2P connection with said another UE in said suitable  
cell.

5. The method in claim 4, further comprising:

10 releasing the P2P connection in said active cell;  
sending a message for completing cell handover to said network system.

6. The method in any one of claim 1 to 3, further comprising:

(d2) receiving a detection control message from said network system;  
(e2) sending a detection report message about the link performance of  
15 said active cell to said network system, according to the detection  
control message.

7. A method to be performed by a network system, for two UEs in P2P  
communication mode to perform cell handover, comprising steps of:

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receiving a detection report message from any UE of said two UEs, indicating that said UE detects there exists a suitable cell in the adjacent cells of its active cell, and the link performance of said suitable cell is a predefined value higher than that of its active cell;

5 starting a judging procedure to decide whether said two UEs can handover into said suitable cell to continue P2P communication.

8. The method in claim 7, wherein step (b) includes:

judging whether the link performance of another UE of said two UEs in said suitable cell can meet the requirement for communication quality.

10 9. The method in claim 8, further comprising:

(c1) establishing signaling link between said two UEs if the requirement

for communication quality is met;

(d1) sending a cell handover command to said two UEs so that said two UEs can establish P2P connection in said suitable cell.

15 10. The method in claim 8, further comprising:

(c2) checking the link performance of said another UE in said active cell if the requirement for communication quality can't be met;

(d2) judging whether the link performance of said two UEs in said active

cell can meet the requirement for communication quality;

(e2) sending a command for maintaining P2P communication to said two UEs so that said two UEs can continue P2P communication in said active cell if the link performance of said two UEs in said active cell both can meet the requirement for communication quality.

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11. The method in claim 10, further comprising:

sending a command for switching to conventional communication mode to said two UEs so that said two UEs can switch to conventional mode from P2P mode if the link performance of at least one of said two UEs in said active cell can't meet the requirement for communication quality.

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12. The method in claim 10, wherein step (c2) includes:

sending a detection control message to said another UE, to request said another UE to send a detection report about the link performance of said active cell;

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receiving said detection report from said another UE; checking the link performance of said another UE in said active cell according to said detection report.

13. The method in claim 7, further comprising:

PHCN030056WO

PCT/IB2004/052344

25

receiving a report message about the candidate cells to any UE of said two UEs, the report message indicating that said UE detects the link performance of an adjacent cell of its active cell can meet the requirement for communication quality;

5 marking each candidate cell of said UE according to the report message.

14. A UE (user equipment), comprising:

a detecting unit, for detecting downlink signals of said UE in said active cell and its adjacent cells;

10 a judging unit, for judging whether there exists a suitable cell whose link performance is a predefined value higher than that of said active cell, according to the detection result;

a sending unit, for sending a detection report message to a network system to start a judging procedure of said network system when there exists said suitable cell, wherein said judging procedure decides whether said UE and another UE in P2P communication can handover into said suitable cell to continue P2P communication;

15. The UE in claim 14, further comprising:

a receiving unit, for receiving a cell handover command from said

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PHCN030056 WO

26

PCT/IB2004/052344

network system;

an establishing unit, for establishing a P2P connection with said another UE in said suitable cell.

16. A network system, comprising:

5           a receiving unit, for receiving a detection report message from any UE of said two UEs, the detection report message indicating that said UE detects there exists a suitable cell in the adjacent cells of its active cell, and the link performance of said suitable cell is a predefined value higher than that of its active cell;

10           a judging unit, for starting a judging procedure to decide whether said two UEs can handover into said suitable cell to continue P2P communication, wherein said judging unit is for judging whether the link performance of another UE of said two UEs in said suitable cell can meet the requirement for communication quality.

15           17. The network system in claim 16, further comprising:

an establishing unit, for establishing signaling link for said two UEs when said judging unit judges that the requirement for communication quality is met;

a sending unit, for sending a cell handover command to said two UEs

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PCT/IB2004/052344

PHCN030056WO

27

so that said two UEs can establish P2P connection in said suitable cell.

18. The network system in claim 17, further comprising:

a detecting unit, for checking the link performance of said another UE in  
said active cell when said judging unit judges that the requirement for  
communication quality can't be met;

5            said judging unit, for judging whether the link performance of said two  
UEs in said active cell can meet the requirement for communication quality;

said sending unit, for sending a command for maintaining P2P  
communication to said two UEs so that said two UEs can continue P2P  
10          communication in said active cell when the link performance of said two UEs  
in said active cell both can meet the requirement for communication quality.

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